

Natural History' will fulfil the object with which the book has been produced. Its *raison d'être* is stated by the author, in his preface, as follows:—"It has been recently asserted," he says, "that zoology is not a subject which can be profitably taught in schools . . . ; and the present work is an attempt to solve, upon a new basis, the problem how the facts of natural history can be imparted to the previously uninstructed beginner in such a manner that he may obtain some real knowledge of the subject, and not a mere parrot-like acquaintance with a greater or less number of technical names." With this purpose in view, Dr. Nicholson has selected a series of types representing the classes adopted in his former manuals: he describes the structure of these in popular language, and points out at the end of each description what characters of the type are common to the rest of the class to which it belongs. It is evident that the amount of zoological knowledge thus conveyed is very limited; and as the very essence of such knowledge consists in a more or less exact and extended acquaintance with the various forms which the same type of structure can put on in its different living manifestations, it is clear that the zoological ideas to be acquired by the learner from this book will be of a peculiarly imperfect kind.

The value of such a work as Dr. Nicholson's must depend greatly on the selection of the types; and among the lower classes of the animal kingdom, at all events, it is almost impossible to select types\* which shall really be good general representatives of their classes. In the book before us, *Amœba* serves as the type of the Rhizopoda, *Hydra* of the Hydrozoa, a rotifer of the Scolecida, and the leech of the Annelida.

It seems to us that what is needed in order to popularize the study of zoology among the young is a treatment of the subject in a rather more picturesque style, a recognition that the creatures treated of are living beings with most interesting habits and functional peculiarities to be studied, and not mere agglomerations of organs to be anatomized. This purpose Dr. Nicholson's new manual does not fulfil; and for teaching junior classes we should greatly prefer his little 'Introductory Text-book of Zoology.'

*Endomyceici Recitati. A Catalogue of the Endomyceici, &c., with Descriptions of New Species and Notes.* With a Plate by E. W. Robinson. By HENRY STEPHEN GORHAM, Vicar of Shipley, Sussex. Williams and Norgate.

UNDER the above singular title Mr. Gorham has given us a useful catalogue of the Coleopterous family Endomychidæ. The number of species belonging to it is not large, with the new species here described amounting to 302, arranged under 46 genera. The author names the Endomychidæ a "group," here called Endomyceici; and its sub-families he elevates to the rank of families, with the addition of one bearing the very awkward name of Paussidoidæ. No reason for these alterations is given; so we suppose we must attribute them to the illusive eccentricity of inexperience; but they are to be regretted both as unnecessary and as tending to give a low idea of the logical

capacity of the author's mind. Mr. Gorham, however, is well known among the London entomologists as an acute and highly promising Coleopterist; and we hope he will work up other comparatively neglected families with the same ability he has shown in the *brochure* before us. We regret to see that in the preface the author complains of difficulties thrown in his way by the authorities of the British Museum. There must have been some misapprehension; Dr. Gray, we believe, is as ready now as formerly to assist any one studying the collections under his charge.

## MISCELLANEOUS.

### *On the Respiratory Organs of the Araneida.*

By Dr. P. BERTKAU.

THE old division of the Arachnida into pulmonary and trachean, established by Latreille, lost all its value when Léon Dufour, Dugès, and, after them, Menge and Siebold discovered that the Araneida possessed tracheæ besides their lungs.

One might be surprised at first to see two different aerial respiratory apparatus existing together in the same animal; but Leuckart soon showed that the so-called lungs ought to be considered a formation homologous with that of the tracheæ, and he gives them, in consequence, the name of pulmonary tracheæ (*Lungentracheen*). This interpretation has been generally accepted; and the new observations of M. Bertkau go also to confirm it.

The author describes the structure of the lungs, for which he proposes on his part the name of laminar tracheæ (*Fächertracheen*) and that of the tracheæ properly so called. From these investigations, which have been directed to a great number of genera and species, he deduces a grouping of Araneida based on the modifications that these animals present in their respiratory organs. We shall not follow him in the description that he gives of the lungs, because it contains nothing but well-known facts. We may recall only that the two stigmata which admit the air into these organs are situated on the lower surface of the abdomen, immediately behind the peduncle which unites that region to the cephalothorax. In some genera there is behind these pulmonary stigmata, and quite close to them, another pair of stigmata. It is only in the Mygalidæ that these orifices lead, like the anterior ones, to a second pair of lungs. In *Dysdera*, *Segestria*, and *Argyroneta* they give access to a trachean system. A very short canal, starting from each of them, leads to a wide, compressed, principal trunk, of which the wall is strengthened by chitinous rods, which are either irregularly placed (*Dysdera*) or united into a spiral thread exactly as in the tracheæ of insects (*Segestria* and *Argyroneta*). The greater portion of the trachean trunk inclines forward; a little bursiform appendage is directed backward. In *Dysdera* and *Argyroneta* each of the two anterior or